U.S. Environmental Protection Agency

EARNED VALUE MANAGEMENT (EVM) PROCEDURES

ADDENDUM TO CPIC PROCEDURES

OFFICE OF ENVIRONMENTAL INFORMATION

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EPA's Earned Value Management Procedures (EVMP)

OVERVIEW

Earned Value is the value of completed work in terms of the budget assigned to the work. Earned Value Management (EVM) provides a standard means of objectively measuring work accomplished based on the budgeted value of that work – it is "What you got for what it cost". EVM is a project management technique that integrates cost, schedule, and technical performance measures to monitor and control project resources and compile results into one set of metrics so that effective comparisons can be made. It helps in planning schedule, resources, deliverable dates, effort, and the estimated cost. EVM also helps evaluate and control project risk by measuring project progress in monetary terms.

Mandated by Clinger-Cohen Act (CCA) of 1996 and Office of Management and Budget (OMB) Circular A-11 (June 2002) projects (investments) must institute performance measures and management processes that monitor and compare actual performance to planned results. Agencies must use a performance-based acquisition management system, based on the American National Standards Institute/Electronic Industries Association (ANSI/EIA) Standard 748, to obtain timely information regarding the progress of investments.

All projects with any resources allocated to the Preliminary Design phase (synonymous with OMB's "Planning" phase) or the Development phase (synonymous with OMB's "Acquisition" phase) in EPA's Budget Automation System (BAS) for FY 2004 and beyond are required to perform EVM. Projects in the preliminary design (planning) phase must have an established baseline with the appropriate work breakdown structure and use EVM when prototyping and testing to select the alternative.

PURPOSE

EPA's Earned Value Management Procedures (EVMP) illustrate EPA's guidelines and procedures for collecting and reporting EVM on Information Technology (IT) investments. The EVMP explains how EPA Program Offices are to receive, organize, analyze, and report cost, schedule, and performance of their projects in an Earned Value (EV) environment. Additional Agency policies, procedures, methodologies, training and project management best practices are used in conjunction with the EVMP for the effective planning and management of projects.

This document is intended to assist Project Managers and/or Subject Matter Experts (SME) in completing the EVM Data Submission Template for each of their major investments. Office of Environmental Information's (OEI) Capital Planning and Investment Control (CPIC) Team will analyze and format the data submissions from the Program Offices into an Agency-wide Report Summary for presentation and briefing to the Information Investment Sub-committee (IIS), Chief Information Officer (CIO), and senior management.

EVM data is reported to the IIS on a quarterly basis and to the Office of Management and Budget (OMB) annually via the Exhibit 300.

Period of Assessment:

The EVM Data Submission process is designed to assess the performance of an investment through the end of the previous quarter reporting cumulative data for each month of the quarter. For example, if the review, itself, is being conducted in the second quarter of a fiscal year, the performance data that Program Offices provide for the investment should reflect performance through the end of the first quarter. This allows Program Offices to collect and report on a period of performance that has been completed as opposed to a period that is still in progress.

OMB Scoring Criteria:

The following scoring criteria are from OMB Circular A-11, Section 300. They detail the qualities that OMB looks for in an organization to determine its Agency level score in the area of Performance Based Management:

Performance Based Management System (PB) (Part I, Section I.H)

5 Agency will use, or uses an Earned Value Management System (EVMS) that meets ANSI/EIA Standard 748 and investment is earning the value as planned for costs, schedule, and performance goals.
4 Agency uses the required EVMS and is within the variance levels for two of the three criteria. Work is needed on the third issue.
3 Agency uses the required EVMS but the process within the agency is either very new, not fully implemented, or there are weaknesses in this investment's EVMS information.
2 Agency seems to re-baseline rather than report variances.
1 There is no evidence of PB.

EPA E-Government Scorecard:

The investment data that is assessed during the quarterly EVM data submission process will also be used to determine the Agency scores on the EPA e-Government Scorecard. While the EVM Data Submission process is focused on the performance of IT investments, the E-Government Scorecard assesses the performance of the Agency's IT portfolios. Therefore, the scorecard will reflect the performance of all major IT investments within a portfolio each quarter.

A. EVM DATA COLLECTION REQUIREMENT

EPA Directive2100.4, Agency System Life Cycle Management Policy, requires contractors to provide Project Managers with monthly EVM data documenting the cost, schedule and performance of their projects. It is the responsibility of the Project Managers to review the reports provided on a monthly basis and make adjustments to the projects cost and schedule accordingly. The Project Managers shall also provide their management with the results of their monthly review.

Section 1.3 of the Policy cites the Legislative and Executive Authority for that policy, including the Clinger Cohen Act of 1996 and OMB Circular A-11. OMB Circular A-11, Section 300, outlines the requirements for the use of EVM.

B. REPORTING PROCESS

1) Data Calls:

The quarterly EVM data submission process is initiated by a data call sent to the appropriate EPA's CPIC IT Investment Project Managers and Senior IRM Officials (SIRMO) by the OEI CPIC Team. The data call will contain specific guidance and requirements for the data submission, an electronic version of the EVM Data Submission Template, the Qualification Statement, and the "Corrective Action" Plan Template if necessary. These documents will be used by the Program Offices when submitting quarterly EVM data for their major investments. EVM data not submitted using the official Agency template will not be accepted.

2) Project Management Qualification:

On an annual basis, a statement verifying the Project Manager for the investment is qualified to the level of the investment is required. Project Managers provide a statement to the OEI CPIC Team indicating the date he/she was or plan to be qualified to the level of the investment (Figure 1). For details on the EPA definition of qualified, contact the OEI Human Capital Staff at 202-566-0331, as of December 2004.

Figure 1 Project Manager's Certification

Project Management Qualification:

Enter the name of the Project Manager and the completion or planned completion date when the Project Manager was or will be qualified at the level of the investment.

Name: _____

Date: _____

3) Completing the EVM Data Submission Template:

To capture performance information for all major investments, a Microsoft Excel template has been designed to ensure consistency in the collection of the Agency's data. This template corresponds to Tables I.H.4.A – I.H.4.F, Section I.H., Project (Investment) and Funding Plan, Section 300 of OMB Circular A-11, with additional modifications to allow for more accurate calculation and analysis of the data.

The template contains the following individual worksheets: "Project Plan", "Monthly Inputs", "I.H.4 by Month", "EVM Calculations", "SPA Graph for Current FY", and "Project Notes." Illustrations of these individual worksheets are located in Figures 2 – 6 below, and detailed information and instructions for completing the worksheets are contained in Sections II – VII below.

Each of these worksheets is designed to capture the most current performance and status information for the investment. It is the responsibility of the Program Offices to complete all

sections of the template for each of their major IT investments regardless of whether they are funded directly or indirectly.

This template is posted on the EPA Intranet at http://intranet.epa.gov/CPIC/laws.htm, and will be updated and improved in the future. For any questions regarding the use of this template, please contact Anne Mangiafico at (202) 564-9483.

Section I: "Cover" Worksheet

This is the cover page of the worksheet.

Section II: "Project Plan" Worksheet

Information and instructions for completing the "Project Plan" worksheet (See Figure 2):

- This sheet is where BCWS (planned cost) is planned for each milestone over the current Fiscal Year, and the BCWS, BCWP, and ACWP for previous fiscal years may be entered, as well as BCWS for future years (which will determine the project's Budget At Complete). All milestones that will take place in the upcoming Fiscal Year have their Number and Name assigned in the "Milestone # and Name" Column. These titles will be automatically populated throughout the template.
- In the first Table on this sheet, "FY 2005", you will enter the BCWS for each month of the current fiscal year in the yellow cells for each milestone. If no costs are planned for a given month, enter zero.
- All values for BCWS are summed to derive the BAC (Budget at Complete) for each milestone, and the cumulative BCWS for all milestones in the chart.
- Data for this tab can be entered once. If it is filled completely, this tab does not need to be entered monthly.
- In the second table on this sheet, "Life Cycle Plan", the yearly values for BCWS are entered for Past, Present, and Future years; whereas the values for BCWP and ACWP are entered for past years (and updated through the current year).
- The sum total of all the BCWS values for Past, Present, and Future years is also referred to as BAC (Budget at Complete), and is used in many of the calculations in the "EVM Calculations" tab.

Figure 2: Project Plan Worksheet

Milestone # and Name	BAC	FY 2005 BCWS By Month											
		Oct-04	Nov-04	Dec-04	Jan-05	Feb-05	Mar-05	Apr-05	May-05	Jun-05	Jul-05	Aug-05	Sep-05
1	$100,000	$100,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
2	$500,000	$250,000	$250,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
3	$60,000	$10,000	$25,000	$20,000	$5,000	$0	$0	$0	$0	$0	$0	$0	$0
4	$110,000	$0	$10,000	$10,000	$10,000	$10,000	$10,000	$10,000	$10,000	$10,000	$10,000	$10,000	$10,000
5	$10,000	$0	$0	$0	$10,000	$0	$0	$0	$0	$0	$0	$0	$0
6	$1,000,000	$0	$0	$0	$100,000	$225,000	$125,000	$100,000	$100,000	$150,000	$125,000	$50,000	$25,000
7	$1,000,000	$0	$0	$0	$0	$0	$100,000	$250,000	$250,000	$150,000	$150,000	$100,000	$0
8	$350,000	$0	$0	$0	$0	$0	$0	$50,000	$100,000	$175,000	$25,000	$0	$0
30	$0												
Project Totals	$3,130,000	$360,000	$285,000	$30,000	$125,000	$235,000	$235,000	$410,000	$460,000	$485,000	$310,000	$160,000	$35,000
Project Totals (Cumulative)	$3,130,000	$360,000	$645,000	$675,000	$800,000	$1,035,000	$1,270,000	$1,680,000	$2,140,000	$2,625,000	$2,935,000	$3,095,000	$3,130,000

Life Cycle Plan (Non-Cumulative)			
Fiscal Year	BCWS	ACWP	BCWP
2003	$300,000	$300,000	$200,000
2004	$1,000,000	$1,500,000	$1,100,000
2005	$3,130,000	$3,414,500	$3,050,000
2006	$2,500,000		
2007	$2,000,000		
2008	$800,000		
2009	$800,000		
2010	$400,000		
2011			
2012			
2013			
2014			
Totals	$10,930,000	$5,214,500	$4,350,000
Budget at Complete (BAC) =		**$10,930,000**	

Life Cycle Plan (Cumulative)			
Fiscal Year	BCWS	ACWP	BCWP
2003	$300,000	$300,000	$200,000
2004	$1,300,000	$1,800,000	$1,300,000
2005	$4,430,000	$5,214,500	$4,350,000
2006	$6,930,000		
2007	$8,930,000		
2008	$9,730,000		
2009	$10,530,000		
2010	$10,930,000		
2011	$10,930,000		
2012	$10,930,000		
2013	$10,930,000		
2014	$10,930,000		
Budget at Complete (BAC) =		**$10,930,000**	

Section III: "Monthly Inputs" Worksheet

Information and instructions for completing the "Monthly Inputs" worksheet (See Figure 3):

- The Milestone Names and BAC are linked from the "Project Plan" spreadsheet.
- The PM must enter monthly, non-cumulative data; BCWS, ACWP (Actuals), and BCWP (Earned Value) in the cells corresponding to the matching milestone and month. While BCWS can be entered using the data in the "Project Plan" tab as a reference, ACWP and BCWP must be entered monthly. Note: It is very important that PMs do not enter in data for future months in this tab. While BCWS is already planned out, future values must not be entered because the data in the "SPA Graph" sheet will be incorrectly calculated.
- Once the PM has entered the monthly data for each milestone (up through the most recent month that data exists), he/she may move on to the next tab.

Figure 3: Monthly Inputs Worksheet

Milestone # and Name	October				November				December				January			
	BAC	BCWS (Monthly)	ACWP	BCWP	BAC	BCWS (Monthly)	ACWP	BCWP	BAC	BCWS (Monthly)	ACWP	BCWP	BAC	BCWS (Monthly)	ACWP	BCWP
1	$100,000	$100,000	$70,000	$70,000	$100,000	$0	$24,000	$20,000	$100,000	$0	$10,000	$10,000	$100,000	$0	$0	$0
2	$500,000	$250,000	$130,000	$125,000	$500,000	$250,000	$250,000	$225,000	$500,000	$0	$150,000	$150,000	$500,000	$0	$0	$0
3	$60,000	$10,000	$0	$0	$60,000	$25,000	$15,000	$30,000	$60,000	$20,000	$10,500	$21,000	$60,000	$5,000	$5,000	$9,000
4	$110,000	$0	$0	$0	$110,000	$10,000	$10,000	$10,000	$110,000	$10,000	$10,000	$10,000	$110,000	$10,000	$10,000	$10,000
5	$10,000	$0	$0	$0	$10,000	$0	$0	$0	$10,000	$0	$0	$0	$10,000	$10,000	$11,000	$10,000
6	$1,000,000	$0	$0	$0	$1,000,000	$0	$0	$0	$1,000,000	$0	$0	$0	$1,000,000	$100,000	$100,000	$91,000
7	$1,000,000	$0	$0	$0	$1,000,000	$0	$0	$0	$1,000,000	$0	$0	$0	$1,000,000	$0	$0	$0
8	$350,000	$0	$0	$0	$350,000	$0	$0	$0	$350,000	$0	$0	$0	$350,000	$0	$0	$0
30	$0				$0				$0				$0			

Section IV: "I.H.4 By Month" Worksheet

Information and instructions for completing the "I.H.4 By Month" worksheet (See Figure 4):

- "I.H.4. By Month" is a modification of the I.H.4. table from the OMB Exhibit 300. It has two extra columns, one for monthly cumulative BCWS, and the other for monthly cumulative BCWP.
- The blue cells in this tab are cumulative values current through that month's table, and are derived from the values entered in the yellow cells in the "Monthly Inputs" tab.
- The PM first enters the Scheduled Start and End Date, and the Durations (Days) for each milestone. These dates will be automatically populated in all of the remaining tables in this tab once they are initially entered.
- Next the PM will enter in Actual Start and End Dates for each milestone, once that milestone has actually begun and/or ended. The PM by definition cannot enter in Actual Start and/or End dates unless they have occurred. These values must be manually entered for each following month once they have occurred.
- Once data in this tab has been entered/updated, the PM does not need to enter any more data in the remainder of the template. The remaining tabs automatically generate data for the PM.

Figure 4: I.H.4 By Month Worksheet

October 2004												
Milestones	Planned						Actual					
	Schedule		Duration	Planned Cost	Monthly	Funding	Actual		%	Actual Cost	EV (BCWP)	
	Start	End	(days)	Total Year	Planned Cost	Agency	Start	End	Complete	(ACWP)		
1	10/01/04	10/31/04	31	$100,000	$100,000	EPA	10/01/04		70%	$70,000	$70,000	
2	10/01/04	11/30/04	61	$500,000	$250,000	EPA	10/15/04		25%	$130,000	$125,000	
3	10/15/04	12/31/04	76	$60,000	$10,000	EPA			0%	$0	$0	
4	11/01/04	09/30/05	334	$110,000	$0	EPA			0%	$0	$0	
5	01/01/05	01/31/05	31	$10,000	$0	EPA			0%	$0	$0	
6	02/01/05	09/30/05	243	$1,000,000	$0	EPA			0%	$0	$0	
7	03/01/05	09/30/05	214	$1,000,000	$0	EPA			0%	$0	$0	
8	04/16/05	07/31/05	107	$350,000	$0	EPA			0%	$0	$0	
30				$0	$0	EPA			#DIV/0!	$0	$0	
Totals				$3,130,000	$360,000				6%	$200,000	$195,000	

Section V: "EVM Calculations" Worksheet

Information and instructions for completing the "EVM Calculations" worksheet (See Figure 5):

- This tab automatically calculates the metrics required by OMB for section I.H.4.B of the Exhibit 300. This data is also very useful for a PM to monitor, as it provides a gauge for the project's health.
- Numbers in this template are cumulative through the most recent data entered in the "Monthly Inputs" tab.

Figure 5: EVM Calculations Worksheet

FY 2005												
I.H.4.B.4.	Oct-04	Nov-04	Dec-04	Jan-05	Feb-05	Mar-05	Apr-05	May-05	Jun-05	Jul-05	Aug-05	Sep-05
BCWS	$360,000	$645,000	$675,000	$800,000	$1,035,000	$1,270,000	$1,680,000	$2,140,000	$2,625,000	$2,935,000	$3,095,000	$3,130,000
ACWP	$200,000	$499,000	$679,500	$805,500	$1,059,500	$1,344,500	$1,809,500	$2,269,500	$2,724,500	$2,999,500	$3,214,500	$3,414,500
BCWP	$195,000	$480,000	$671,000	$791,000	$1,035,000	$1,200,000	$1,605,000	$2,075,000	$2,470,000	$2,700,000	$2,865,000	$3,050,000
BAC	$3,130,000	$3,130,000	$3,130,000	$3,130,000	$3,130,000	$3,130,000	$3,130,000	$3,130,000	$3,130,000	$3,130,000	$3,130,000	$3,130,000
% Comp.	6%	15%	21%	25%	33%	38%	51%	66%	79%	86%	92%	97%
CV	-$5,000	-$19,000	-$8,500	-$14,500	-$24,500	-$144,500	-$204,500	-$194,500	-$254,500	-$299,500	-$349,500	-$364,500
CV %	-2.6%	-4.0%	-1.3%	-1.8%	-2.4%	-12.0%	-12.7%	-9.4%	-10.3%	-11.1%	-12.2%	-12.0%
CPI	0.98	0.96	0.99	0.98	0.98	0.89	0.89	0.91	0.91	0.90	0.89	0.89
SV	-$165,000	-$165,000	-$4,000	-$9,000	$0	-$70,000	-$75,000	-$65,000	-$155,000	-$235,000	-$230,000	-$80,000
SV %	-45.8%	-25.6%	-0.6%	-1.1%	0.0%	-5.5%	-4.5%	-3.0%	-5.9%	-8.0%	-7.4%	-2.6%
SPI	0.54	0.74	0.99	0.99	1.00	0.94	0.96	0.97	0.94	0.92	0.93	0.97
ETC	$2,935,000	$2,650,000	$2,459,000	$2,339,000	$2,095,000	$1,930,000	$1,525,000	$1,055,000	$660,000	$430,000	$265,000	$80,000
PF1	1.03	1.04	1.01	1.02	1.02	1.12	1.13	1.09	1.10	1.11	1.12	1.12
PF2	0.53	0.72	0.98	0.97	0.98	0.84	0.85	0.89	0.85	0.83	0.83	0.87
IEAC1	$3,210,256	$3,253,896	$3,169,650	$3,187,377	$3,204,092	$3,506,904	$3,528,807	$3,423,390	$3,452,504	$3,477,198	$3,511,827	$3,504,061
IEAC2	$1,750,047	$2,396,003	$3,093,350	$3,076,555	$3,106,055	$2,972,128	$3,101,766	$3,204,787	$3,287,517	$3,355,573	$3,433,136	$3,484,133
VAC - IEAC 1	-$80,256	-$123,896	-$39,650	-$57,377	-$74,092	-$376,904	-$398,807	-$293,390	-$322,504	-$347,198	-$381,827	-$374,061
VAC - IEAC 2	$1,379,953	$733,997	$36,650	$53,445	$23,945	$157,872	$28,234	-$74,787	-$157,517	-$225,573	-$303,136	-$354,133
VAC % - IEAC 1	-2.6%	-4.0%	-1.3%	-1.8%	-2.4%	-12.0%	-12.7%	-9.4%	-10.3%	-11.1%	-12.2%	-12.0%
VAC % - IEAC 2	44.1%	23.5%	1.2%	1.7%	0.8%	5.0%	0.9%	-2.4%	-5.0%	-7.2%	-9.7%	-11.3%

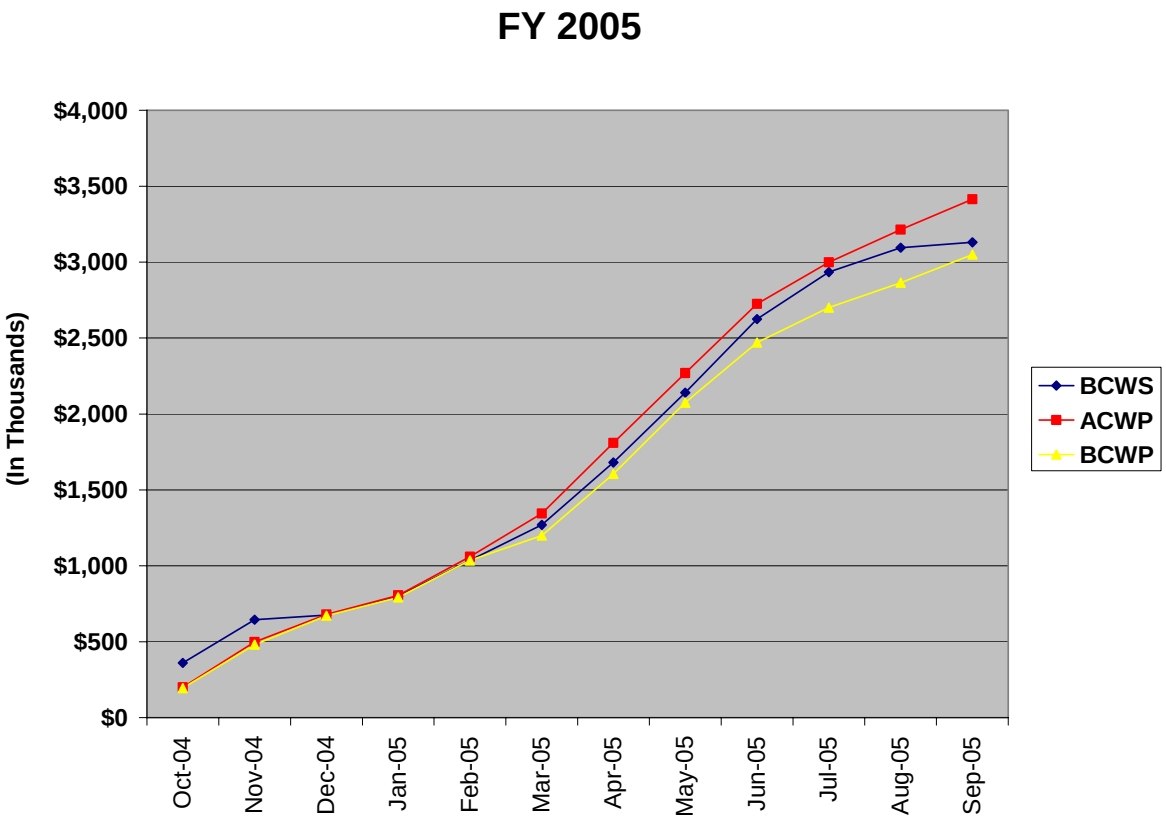
Project Life Cycle (Cumulative through Current Month in FY 2005)												
I.H.4.B.4.	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014
BCWS	$300,000	$1,300,000	$4,430,000	$4,430,000	$4,430,000	$4,430,000	$4,430,000	$4,430,000	$4,430,000	$4,430,000	$4,430,000	$4,430,000
ACWP	$300,000	$1,800,000	$5,214,500	$5,214,500	$5,214,500	$5,214,500	$5,214,500	$5,214,500	$5,214,500	$5,214,500	$5,214,500	$5,214,500
BCWP	$200,000	$1,300,000	$4,350,000	$4,350,000	$4,350,000	$4,350,000	$4,350,000	$4,350,000	$4,350,000	$4,350,000	$4,350,000	$4,350,000
BAC	$10,930,000	$10,930,000	$10,930,000	$10,930,000	$10,930,000	$10,930,000	$10,930,000	$10,930,000	$10,930,000	$10,930,000	$10,930,000	$10,930,000
% Comp.	2%	12%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%
CV	-$100,000	-$500,000	-$864,500	-$864,500	-$864,500	-$864,500	-$864,500	-$864,500	-$864,500	-$864,500	-$864,500	-$864,500
CV %	-50.0%	-38.5%	-19.9%	-19.9%	-19.9%	-19.9%	-19.9%	-19.9%	-19.9%	-19.9%	-19.9%	-19.9%
CPI	0.67	0.72	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
SV	-$100,000	$0	-$80,000	-$80,000	-$80,000	-$80,000	-$80,000	-$80,000	-$80,000	-$80,000	-$80,000	-$80,000
SV %	-33.3%	0.0%	-1.8%	-1.8%	-1.8%	-1.8%	-1.8%	-1.8%	-1.8%	-1.8%	-1.8%	-1.8%
SPI	0.67	1.00	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
ETC	$10,730,000	$9,630,000	$6,580,000	$6,580,000	$6,580,000	$6,580,000	$6,580,000	$6,580,000	$6,580,000	$6,580,000	$6,580,000	$6,580,000
PF1	1.50	1.38	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20
PF2	0.44	0.72	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
IEAC1	$16,395,000	$15,133,846	$13,102,180	$13,102,180	$13,102,180	$13,102,180	$13,102,180	$13,102,180	$13,102,180	$13,102,180	$13,102,180	$13,102,180
IEAC2	$5,068,889	$8,755,000	$10,604,491	$10,604,491	$10,604,491	$10,604,491	$10,604,491	$10,604,491	$10,604,491	$10,604,491	$10,604,491	$10,604,491
VAC - IEAC 1	-$5,465,000	-$4,203,846	-$2,172,180	-$2,172,180	-$2,172,180	-$2,172,180	-$2,172,180	-$2,172,180	-$2,172,180	-$2,172,180	-$2,172,180	-$2,172,180
VAC - IEAC 2	$5,861,111	$2,175,000	$325,509	$325,509	$325,509	$325,509	$325,509	$325,509	$325,509	$325,509	$325,509	$325,509
VAC % - IEAC 1	-50.0%	-38.5%	-19.9%	-19.9%	-19.9%	-19.9%	-19.9%	-19.9%	-19.9%	-19.9%	-19.9%	-19.9%
VAC % - IEAC 2	53.6%	19.9%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%

Section VI: "SPA Graph" Worksheet

Information and instructions for completing the "SPA Graph" worksheet (See Figure 6):

- This tab automatically calculates the SPA Graph required by OMB for section I.H.4.B of the Exhibit 300. This data is also very useful for a PM to monitor, as it provides a gauge for the project's health.
- Source Data for this tab are generated and cumulative through the most recent data entered in the "Monthly Inputs" tab.
- While ACWP and BCWP will only be generated through the most current month, BCWS data for future months is derived from the values entered in the "Project Plan" tab.

Figure 6: SPA Graph Worksheet



Section VII: "Project Notes" Worksheet

Information and instructions for completing the "Project Notes" worksheet:

- This sheet has been left blank so that Project Managers may record any notes or comments they have regarding the project/system/program.

Once all required sections of the template are complete, Project Managers will score the investments as explained in #4: Project Management Scoring of Investment" below.

The contents of the EVM Data Submission Template are subject to change in future reviews based on changing requirements from OMB and the IIS.

4) Project Management Scoring of Investments:

After completing the Template, the Project Manager will also be given an opportunity to assess the performance of their investment. In order to calculate a score, Project Managers should use EPA's EVM Quarterly Review Scoring Criteria (Appendix A) to score their investment. In conjunction with this assessment, they will be able to provide explanations or insight on issues that are impacting the performance of their investment, as well as any actions they already instituted to correct problems that exist.

The scoring criteria are subject to change based as the quarterly review process matures. If the scoring criteria changes, Program Offices and Subject Matter Experts will be notified by the OEI CPIC Team.

5) Submitting the EVM Data Submission Template:

All Templates should be submitted to OEI, CPIC Team via E-Mail for review and analysis prior to submission to the Information Investment Subcommittee (IIS) on a quarterly basis to equip them to proactively monitor project and portfolio performance.

Once the completed Template has been received by OEI an e-mail confirmation will be sent notifying the Project Manager of the analyst assigned to review their submission and coordinate request for additional information and/or clarification required for finalization.

C. ANALYSIS PROCESS

Analyzing the EVM Data Submission Templates:

After Program Offices submit the EVM Data Submission Templates, it is the responsibility of the OEI CPIC Team to perform an analysis on each investment by reviewing the templates submitted by the Program Offices. This analysis will identify any performance issues that may exist as well as provide a preliminary score for the investment.

To obtain the best analysis of the projects use of earned value, valid accounts of the projects "Total Planned Cost (Budget At Completion - BAC)", "Monthly Planned Cost (BCWS)", "Actual Percent Complete" and "Actual Cost Spent (ACWP)" are required. Various calculations performed on these totals will provide the project's "Budgeted Cost of Work Performed (BCWP)", Estimate At Completion (EAC)", "Cost/Schedule Variance (CV/SV)", "Cost/Schedule Performance Index (CPI/SPI)", "Performance Factors (PF)", "Variance at Completion (VAC)" and Estimates to Completion (EAC)." *Figure 7* defines the calculations used in analyzing the data provided.

Figure 7 Earned Value Calculations

ACWP	= cum to date actual dollars for each month, all milestones
BCWP	= cum to date earned value (% complete * total BCWS), for all milestones, each month
BAC	= total budget for all Development milestones from Ex. 300 (or rebaselined amount) for FY 04 (or budget for all milestones if doing EVM on O&M & Planning milestones too). Same number needs to be entered for each month - doesn't change monthly.
% Comp.	= cumulative % complete for all milestones, for each month. Try to use objective criteria for determining percent complete to extent possible - e.g., % of deliverables completed vs. total # of deliverables scheduled for FY under a milestone, % of total defects planned to be fixed, % of total milestones completed.

CV	Cost Variance = (BCWP-ACWP)
CV %	Cost Variance % = (CV/BCWP) x 100%
CPI	Cost Performance Index (CPI) = (BCWP/ACWP)
SV	Schedule Variance = (BCWP-BCWS)
SV %	Schedule Variance % = (SV/BCWS) x 100%
SPI	Schedule Performance Index (SPI) = (BCWP/BCWS)
ETC	Estimated Cost to Complete (ETC)= BAC-BCWP
PF1	Performance Factor 1 = ACWP/BCWP or 1/CPI
PF2	Performance Factor 2 = 1/(CPI*SPI)
IEAC1	ACWPc + (PF1 * ETC)
IEAC2	ACWPc + (PF2 * ETC)
VAC - IEAC 1	Variance at Completion (VAC) =
VAC - IEAC 2	(BAC minus EAC) for both EACs above
VAC % - IEAC 1	Variance at Completion % =
VAC % - IEAC 2	(VAC/BAC) x 100% for both EACs above

D. REVIEW, EVALUATION, AND SCORING PROCESS

1) Automating the EVM Quarterly Review Process:

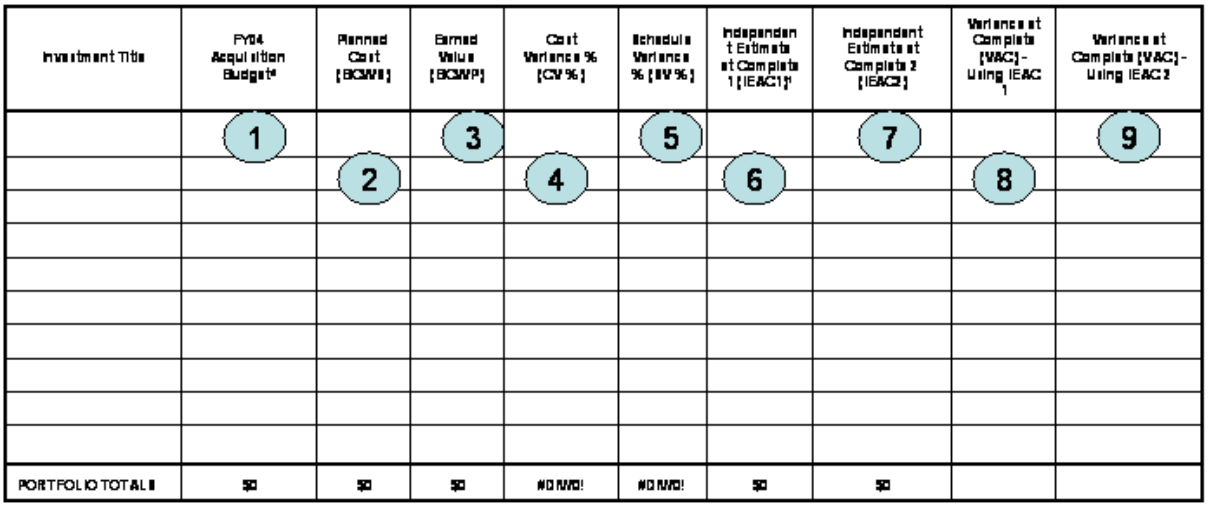
For the FY 2005 CPIC reporting cycle, the OEI will continue using the Microsoft Excel version of the EVM Data Submission Template to collect investment data while the quarterly review process continues to mature.

OEI is continuing to research and determine a more advanced automation process for the completing and submitting the EVM Data Submission Template. OEI is utilizing wInSight as the Agency's data analysis tool.

2) Developing the EVM Quarterly Review Portfolio Report:

Once all the investments have been analyzed and a preliminary score has been assessed, the OEI is responsible for creating the EVM Quarterly Review Portfolio Summary Report. This report will document the findings of the OEI CPIC Team's analysis on all the major IT investments within EPA. This summary report, along with the individual Performance Reports for the investments, will be provided to the IIS and the CIO. A diagram of the EVM Quarterly Review Portfolio Summary Report with an explanation of calculations used to obtain totals is displayed in *Figure 8* below.

Figure 8: EVM Quarterly Review Portfolio Summary Report



Investment Title	FY04 Acquisition Budget*	Planned Cost (BCWS)	Earned Value (BCWP)	Cost Variance % (CV%)	Schedule Variance % (SV%)	Independent Estimate at Complete 1 (IEAC1)*	Independent Estimate at Complete 2 (IEAC2)	Variance at Complete (VAC) - Using IEAC 1	Variance at Complete (VAC) - Using IEAC 2
	1		3		5		7		9
		2		4		6		8	
PORTFOLIO TOTALS	$0	$0	$0	#DIV/0!	#DIV/0!	$0	$0		

NOTE: Dollars are in Thousands

1. Fiscal Year Acquisition Budget
2. Planned Cost (BCWS)
3. Earned Value (BCWP)
4. Cost Variance % (CV%)
5. Schedule Variance % (SV%)
6. Independent Estimate at Completion 1 / 2 (IEAC1/IEAC2)
7. Variance at Completion Using IEAC1/IEAC2

The OEI CPIC Team also creates a "bulls-eye" chart to graphically depict the variances for each project. This allows for quick recognition of problem projects and trends and enables management to focus its resources on those projects or issues that require the most attention.

3) OEI Evaluation and Scoring Process:

Evaluation:

In order to evaluate projects performance, the OEI CPIC Team will analyze how an investment performed with respect to the following four areas:

1. Project Management Qualification
2. Cost Variance
3. Schedule Variance
4. Performance Goals

This process evaluates whether investments are performing within + or -10% of the cost and schedule baseline goals as defined in their business cases, meeting at least 90% of their performance goals, and the project manager is qualified at the level of the investment. The Project Management qualifications are reviewed on an annual basis or as needed when a Project Manager changes.

Scoring:

Scoring of the EVM Data Submissions and EVM Quarterly Review Portfolio Summary Report will be the responsibility of the OEI CPIC Team. The Team will use the same scoring criteria as outlined for the Project Managers in the "Project Management Scoring" section of this document and may require individual Program Offices to provide additional justification regarding projects performance. Each section will be scored independently against specific criteria. Once all the individual sections are scored, an overall score will be assessed for the investment.

4) Developing a "Corrective Action" Plan:

Developing a "Corrective Action" Plan is the responsibility of the Program Offices/Project Managers. For major investments that have a variance of + or -10% or more, Project Managers are required to develop a "Corrective Action" Plan. It is at the discretion of the IIS and CIO as to whether or not Program Offices/Project Managers will need to draft a "Corrective Action" Plan for those investments within a variance of + or -10%.

"Corrective Action" Plans are documents that allow Program Offices to define the strategy that will be employed to improve the performance of their investment(s). The "Corrective Action" Plan, itself, is a template that Program Offices can complete as necessary. The template requires Program Offices to provide a brief description of the strategies they will implement in order to correct existing problems; the specific, actionable tasks associated with each strategy; points of contact for each task; and, start and end dates for executing them. Project Managers may be required to provide a status on the execution of "Corrective Action" Plans in future Quarterly Reviews. A sample "Corrective Action" Plan template has been provided in Appendix B.

5) Evaluating "Corrective Action" Plans

The OEI CPIC Team will be responsible for evaluating the effectiveness of all "Corrective Action" Plans that are developed by the Program Offices. If the OEI CPIC Team does not agree with the documented corrective strategy, a meeting may be required with the responsible Program Office in order to obtain a better understanding of the challenges facing the investment. Subsequently, the OEI CPIC Team may make recommendations for improving the "Corrective Action" Plan as well as the performance of the investment. In addition, corrective action plans will be provided to the IIS for review and determination if appropriate actions are being taken.

APPENDIX A. EPA'S EVM QUARTERLY REVIEW SCORING CRITERIA

A. Purpose:

This document defines the proposed scoring criteria to be used by the OEI CPIC Team when conducting the quarterly reviews for all Major IT investments.

B. Overview of EVM Quarterly Review Scoring Process:

The EPA Quarterly Review process is designed to collect and evaluate performance for all major IT investments on a quarterly basis. Quarterly Reviews assess an investment's ability to meet the cost, schedule, and performance baseline goals defined in its business case. Investments are also evaluated on the existence of the qualification of the project manager at the level of the investment. The OEI CPIC Team will assess and score investments based on how well they achieved their goals and satisfied the project management qualification requirements using a set of standardized scoring criteria.

Prior to the OEI CPIC Team review, each Project Manager should use the same scoring criteria to assess the performance of their own investment. If the self-scoring results in a score of YELLOW or RED, the Project Manager will need to develop corrective actions to improve the performance and update the project management qualification status of the investment. These corrective actions should be documented in the appropriate section on the EVM Data Submission Template.

C. Scoring each section of the EVM Data Submission Template:

To score an EVM Data Submission Template, a "stoplight" rating scale will be utilized. Specifically, there are four areas in which investments will be evaluated. These areas were selected because they are key criteria for the PMA Scorecard, the EPA E-Government Scorecard, and the development of sound IT business cases. These areas include:

1. Project Manager Qualification
2. Cost Variance
3. Schedule Variance
4. Performance Variance

The tables on the following pages provide the thresholds for the criteria. Where an investment falls within these thresholds will determine an investment's score of Red, Yellow, or Green for each of the criteria:

1. Project Management Qualification			
Description	**Red**	**Yellow**	**Green**
Assessment of the investment's compliance with the EPA Project Manager Qualification requirements. Project Managers for major investments are required to be qualified at specific levels based on the level of the investment as determined by OMB and the CIO	Project Manager Qualification section was not completed **or** Project Manager has not been identified for the investment **or** Project Manager has been identified, but is not certified at the correct level, and is not currently scheduled to take any qualification courses	Project Manager has been identified, and is scheduled to take, or is taking, the qualification courses, but he/she will not be certified by the end of the fiscal year	Project Manager is qualified at the level of the investment **or** Project Manager is not qualified at the level of the investment, but is schedule to be qualified by the end of the fiscal year

2. Cost Variance			
Description	**Red**	**Yellow**	**Green**
Assessment of the investment's cost performance. Cost variance should not be greater than + or -10% for any investment. When an investment's cost variance exceeds this threshold a corrective plan of action should be developed by the project manager, and submitted in the quarterly reviews.	Investment Cost information was not reported for the quarterly review **or** Investment's Cost variance is greater than + or -10%, and corrective actions are not in place, or the corrective actions are deemed insufficient to correct the variance problems	Investment Cost variance is greater than + or -10%, but sufficient corrective actions are in place to correct the variance problems	Investment Cost variance is not greater than + or -10%

3. Schedule Variance			
Description	**Red**	**Yellow**	**Green**
Assessment of the investment's schedule performance. The Schedule variance should not be greater than + or -10% for any investment. When an	Investment Schedule information was not reported for the quarterly review **or** Investment's Schedule variance is	Investment Schedule variance is greater than + or -10%, but sufficient corrective actions are in place to correct the variance problems	Investment Schedule variance is not greater than + or -10%

investment's schedule variance exceeds this threshold a corrective plan of action should be developed by the project manager, and submitted in the quarterly reviews.	greater than + or -10%, and corrective actions are not in place, or the corrective actions are deemed insufficient to correct the variance problems		

4. Performance Variance			
Description	**Red**	**Yellow**	**Green**
Assessment of the investment's ability to meet its performance goals. The performance variance should not be greater than -10% for any investment. When an investment's performance variance exceeds this threshold a corrective plan of action should be developed by the project manager, and submitted in the quarterly reviews.	Investment Performance information was not reported for the quarterly review **or** Investment is not meeting 90% of its Performance goals, and corrective actions are not in place, or the corrective actions are deemed insufficient to correct the performance issues	Investment is not meeting 90% of its Performance Goals, but sufficient corrective actions are in place to correct the performance issues	Investment is meeting 90% or more of its Performance Goals

D. Scoring the Investment:

Once a score has been assessed for each section of the Quarterly Review Template, an overall score will be generated for the investment. The criteria for generating an overall score are described below:

To receive a **GREEN** score for the overall performance of the investment, the following conditions must apply:

All of the following criteria received a green score:
- Project Management Qualification
- Cost Variance
- Schedule Variance
- Performance Variance

To receive a **YELLOW** score for the overall performance of the investment, the following conditions must apply:

One or more of the following criteria received a yellow score, and none received a red score:

- Project Management Qualification
- Cost Variance
- Schedule Variance
- Performance Variance

To receive a **RED** Score for the overall performance of the investment, the following conditions must apply:

One or more of the following criteria received a red score:

- Project Management Qualification
- Cost Variance
- Schedule Variance
- Performance Variance

APPENDIX B. THE CORRECTIVE ACTION PLAN TEMPLATE

A. Purpose:

This template may be used by Program Offices/Project Managers when their investment receives a variance of + or -10% or more in cost, schedule or performance or they are requested by the IIS and/or CIO to complete one. The use of this template allows the OEI CPIC Team to collect standardized information on strategies and tasks for improving the performance of an investment.

B. Overview:

"Corrective Action" Plans may be developed using a standard template. This template is designed to capture the specific tasks, dates, and responsible persons for improving the performance of investments that received a variance of + or -10% or more in cost, schedule or performance. The template also requires Project Managers to consider how their "Corrective Action" Plan may impact other areas of the investment. It is possible that a "Corrective Action" Plan may consist of multiple strategies to improve performance depending on the number of areas that are in need of improvement.

"Corrective Action" Plans may be subject to review by the IIS and CIO in order to assess the feasibility of the plan. Plans that do not sufficiently address the issue(s) identified in the quarterly IIS meeting may require the Project Manager to meet with the IIS. This meeting will serve as a forum where the Project Manager and the IIS can collaborate on approaches for improving the effectiveness of the "Corrective Action" Plan.

Below is a sample of the template that should be used for developing a "Corrective Action" plan:

1. Project Management Qualification					
Brief Description of the Issue:					
Brief Description of the Corrective Action Plan strategy:					
Task Number	**Corrective Task**	**Point of Contact**	**Start Date**	**End Date**	**Comments**
1.1					
1.2					
1.3					
1.4					
1.5					
Impacts to other EVM Quarterly Review Elements:					

2. Cost Variance					
Brief Description of the Issue:					
Brief Description of the Corrective Action Plan strategy:					
Task Number	**Corrective Task**	**Point of Contact**	**Start Date**	**End Date**	**Comments**
2.1					
2.2					
2.3					
2.4					
2.5					
Impacts to other EVM Quarterly Review Elements:					

3. Schedule Variance					
Brief Description of the Issue:					
Brief Description of the Corrective Action Plan strategy:					
Task Number	**Corrective Task**	**Point of Contact**	**Start Date**	**End Date**	**Comments**
3.1					
3.2					
3.3					
3.4					
3.5					
Impacts to other EVM Quarterly Review Elements:					

4. Performance Variance					
Brief Description of the Issue:					
Brief Description of the Corrective Action Plan strategy:					
Task Number	**Corrective Task**	**Point of Contact**	**Start Date**	**End Date**	**Comments**
4.1					
4.2					
4.3					
4.4					
4.5					
Impacts to other EVM Quarterly Review Elements:					

APPENDIX C. GLOSSARY OF TERMS

ACWP – Actual Cost for Work Performed (AKA Actuals) the costs actually incurred and recorded in accomplishing the work performed within a given time period.

BCWS – Budgeted Cost for Work Scheduled (AKA Planned Value) the sum of the budgets for all work packages, planning packages, etc., scheduled to be accomplished (including work in process), plus the amount of level of effort and apportioned effort scheduled to be accomplished within a given period.

BCWP – Budgeted Cost for Work Performed (AKA Earned Value) the sum of the budgets for completed work packaged and completed portions of open work packages, plus the applicable portion of the budgets for level of effort and apportioned effort.

Capital project (investment) – The acquisition of a capital asset and the management of that asset through its life-cycle after the initial acquisition. Capital projects (investments) may consist of several useful segments.

Control Account (CA) – A management control point at which budgets (resource plans) and actual costs are accumulated and compared to earned value for management control purposes. A control account is a natural management point for planning and control since it represents the work assigned to one responsible organizational element on one program work breakdown structure element.

Earned value management (EVM) – A project (investment) management tool that effectively integrates the investment scope of work with schedule and cost elements for optimum investment planning and control. The qualities and operating characteristics of earned value management systems are described in American National Standards Institute (ANSI)/Electronic Industries Alliance (EIA) Standard –748–1998, *Earned Value Management Systems*, approved May 19, 1998. It was reaffirmed on August 28, 2002. A copy of Standard 748 is available from Global Engineering Documents (1–800–854–7179). Information on earned value management systems is available at www.acq.osd.mil/pm.

Life-cycle costs – The overall estimated cost, both Government and contractor, for a particular program alternative over the time period corresponding to the life of the program, including direct and indirect initial costs plus any periodic or continuing costs of operation and maintenance.

Major IT investment – A system or investment that requires special management attention because of its importance to an agency's mission; was a major investment in the prior submission and is continuing; is for financial management and spends more than $500,000; is directly tied to the top two layers of the Federal Enterprise Architecture (Services to Citizens and Mode of Delivery); is an integral part of the agency's modernization blueprint (EA); has significant program or policy implications; has high executive visibility; and is defined as major by the agency's capital planning and

investment control process (for EPA >=$3M annually). All major investments must be reported on exhibit 53. All major investments must submit a "Capital Asset Plan and Business Case," exhibit 300. Investments that are E-Government in nature or use e-business technologies must be identified as major investments regardless of the costs. If you are unsure about what investments to consider as "major," consult your office's senior budget officer. Systems not considered "major" are "non-major."

Mixed life-cycle investment – An investment that has both development/modernization/enhancement (DME) and steady state aspects. For example, a mixed life-cycle investment could include a prototype or module of a system that is operational with the remainder of the system in DME stages; or, a service contract for steady state on the current system with a DME requirement for system upgrade or replacement.

Non-major IT investment – Any initiative or investment not meeting the definition of major defined above but that is part of the agency's IT investments. All non-major investments for EPA >=$250K annually must be reported individually on the exhibit 53.

Operational (steady state) – An asset or part of an asset that has been delivered and is performing the mission.

Performance Measurement Baseline (PMB) – The time-phased budget plan against which contract performance is measured. It is formed by the distributed budgets. It is equal to the total allocated budget less management reserve.

Performance-based acquisition management – A documented, systematic process for program management, which includes integration of program scope, schedule and cost objectives, establishment of a baseline plan for accomplishment of program objectives, and use of earned value techniques for performance measurement during execution of the program. EVMS is required for those parts of the investment where developmental effort is required. This includes prototypes and tests to select the most cost effective alternative during the Planning Phase, the work during the Acquisition Phase, and any developmental, modification or upgrade work done during the Operational/Steady State Phase. EVMS is to be applied to both Government and contractor efforts. For operational/steady state systems, an operational analysis system as discussed in Phase IV of the Capital Programming Guide is required. A performance-based service contract/agreement with a defined quality assurance plan should be the basis for monitoring contractor or in-house performance of this phase.

Planning – Preparing, developing or acquiring the information you will use to: design the investment; assess the benefits, risks, and risk-adjusted life-cycle costs of alternative solutions; and establish realistic cost, schedule, and performance goals, for the selected alternative, before either proceeding to full acquisition of the capital project (investment) or useful segment or terminating the investment. Planning must progress to the point where you are ready to commit to achieving specific goals for the completion of the acquisition before preceding to the acquisition phase. Information gathering activities may include market research of available solutions, architectural drawings, geological

studies, engineering and design studies, and prototypes. Planning is a useful segment of a capital project (investment). Depending on the nature of the investment, one or more planning segments may be necessary.

Planning Package (PP) – A logical aggregation of work within a control account, normally the far-term effort, that can be identified and budgeted in early baseline planning, but is not yet defined into work packages.

Work Package (WP) – A detailed task or set of tasks performed within a control account. It represents units of work at levels where work is performed. It is clearly distinguished from all other work packages; is assigned to a single organizational element; has scheduled start and completion dates; allows for the objective measurement of discrete work; has a budget or assigned value (dollars); the duration is limited to a relatively short span of time.

Revision History:

Revision Date	Comments
June 25, 2004	EVM Interim Procedures Approved
December 18, 2004	EVM Procedures for Final Approval

APPROVED: _____ DATE: _____

Mark Day, Director
Office of Technology Operations and Planning
Office of Environmental Information